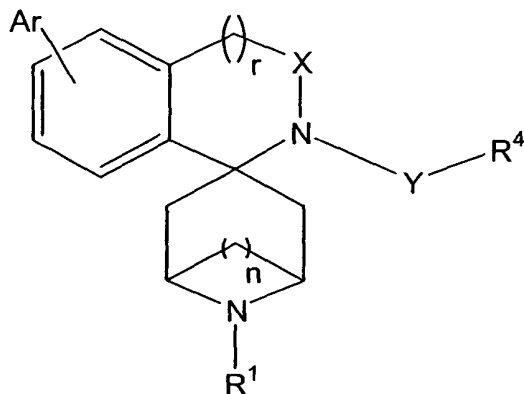


WHAT IS CLAIMED:

1. A compound represented by the structural formula



formula I

or a pharmaceutically acceptable salt or solvate wherein

X is $-\text{CH}_2-$, $-\text{SO}_2-$, carbonyl, $-\text{CHCH}_3$ or $-\text{C}(\text{CH}_3)_2-$;

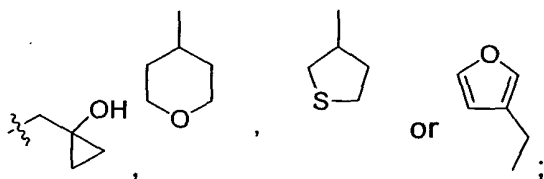
Y is $-(\text{CR}^2\text{R}^3)_p\text{C}(\text{O})\text{NH}-$, $-(\text{CR}^2\text{R}^3)_p\text{NH}-$, $-\text{C}(\text{O})(\text{CR}^2\text{R}^3)_p\text{NH}-$, $-\text{C}(\text{O})\text{C}(\text{O})\text{NH}-$ or $-\text{C}(\text{O})(\text{CR}^2\text{R}^3)_p-$, wherein p is a number from 1 to 3 and when p is more than 1, each (CR^2R^3) can be the same or different;

n is 0, 2 or 3, and when n is 0, no connecting bond exists between the two carbons adjacent to the nitrogen;

r is a number from 0 to 1 and when r is 0, X is directly linked to the aromatic ring;

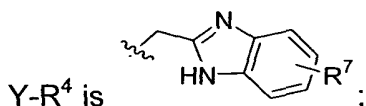
Ar is aryl, heteroaryl, R^6 -substituted aryl or R^6 -substituted heteroaryl;

R^1 is hydrogen, -alkyl, -cycloalkyl, aralkyl, heterocyclyl, heteroaralkyl, $-\text{C}(\text{O})\text{R}^5$, $-\text{C}(\text{O})\text{OR}^5$, $-\text{C}(\text{O})\text{NR}^8\text{R}^9$, $-\text{SO}_2\text{R}^5$, $-\text{SO}_2\text{NR}^8\text{R}^9$, aryl, heteroaryl, $-\text{CF}_3$, -alkyl substituted with R^{10} , -cycloalkylalkyl, -cycloalkylalkyl substituted with R^{10} on the cycloalkyl ring,



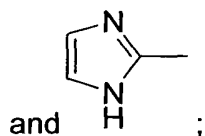
R^2 and R^3 can be the same or different, each being independently hydrogen or -alkyl; or R^2 and R^3 can be joined together with the carbon to which they are attached to form a 3 to 7-membered ring;

R^4 is aryl, heteroaryl, R^7 -substituted aryl, R^7 -substituted heteroaryl or



R^5 is -alkyl, aryl, aralkyl or heteroaryl;

R^6 is 1 to 5 substituents, each R^6 can be the same or different and each is independently selected from the group consisting of -OH, -alkoxy, -OCF₃, -CN, -alkyl, halogen, -NR⁸R⁹, -C(O)NR⁸R⁹, -NR⁸SO₂R⁵, -SO₂NR⁸R⁹, -SO₂R⁵, -C(O)R⁵, -C(O)OR⁵, -CF₃, -(CR²R³)_pNR⁸R⁹ where p is a number from 1 to 3, -CHO, -C=NOR⁸,



R^7 is hydrogen or 1 to 4 substituents, each R^7 can be the same or different and each is independently selected from the group consisting of -OH, -alkoxy, -OCF₃, -CN, halogen, -nitro, -NR⁸R⁹, -NR⁸C(O)R⁵, -C(O)NR⁸R⁹, -NR⁸SO₂R⁵, -SO₂NR⁸R⁹, -SO₂R⁵, -C(O)R⁵, -C(O)OR⁸, -CF₃, -(CR²R³)_pNR⁸R⁹, -(CR²R³)_pNR⁸C(O)R⁵ where p is a number from 1 to 3, -C(=NH)NR⁸R⁹, -C(=NCN)NR⁸R⁹ and -CHO; or two adjacent R^7 groups can be joined together to form a methylenedioxy or ethylenedioxy group;

R^8 is hydrogen or -alkyl;

R^9 is hydrogen, -alkyl, aryl, substituted aryl, heteroaryl or aralkyl;

and

R^{10} is -OH, -alkoxy, -cycloalkyl, -cycloalkylalkyl, -C(O)NR⁸R⁹, -NR⁸R⁹, -NR⁸SO₂R⁵, -NR⁸C(O)R⁵, -NR⁸C(O)OR⁵, -NR⁸C(O)NR⁸R⁹, -C(O)OH or -C(O)OR⁵.

2. The compound of claim 1 wherein

X is -SO₂-;

Y is -C(R²R³)_pC(O)NH-;

R^2 and R^3 are hydrogen or alkyl;

n is 0;

and

r is 0.

3. The compound of claim 2 wherein R^2 and R^3 are hydrogen.

4. The compound of claim 1 wherein

X is carbonyl;

Y is $-C(R^2R^3)_pC(O)NH-$;

R^2 and R^3 are hydrogen or alkyl;

n is 0;

and

r is 0.

5. The compound of claim 4 wherein R^2 and R^3 are hydrogen.

6. The compound of claim 1 wherein

X is $-CH_2-$;

Y is $-C(R^2R^3)_pC(O)NH-$;

R^1 is hydrogen, -alkyl, -cycloalkyl, -cycloalkylalkyl, heteroaralkyl, heterocyclyl, -alkyl substituted with -cycloalkyl, -alkyl substituted with R^{10} , $-SO_2NR^8R^9$, $-SO_2R^5$, $-C(O)R^5$ or $-C(O)OR^5$;

R^2 and R^3 are hydrogen or alkyl;

n is 0;

r is 1;

and

Ar is aryl or R^6 -substituted aryl.

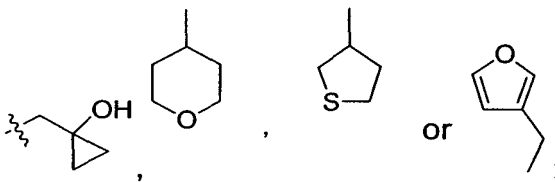
7. The compound of claim 6 wherein

R^1 is hydrogen, methyl, ethyl, hydroxyethyl, cyclobutyl, cyclopentyl, cycloheptyl, -propyl, $-SO_2CH_3$, $-SO_2N(CH_3)_2$, $-COCH_3$, $-C(O)OC(CH_3)_3$, isopropyl,

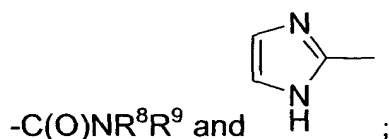
cyclopropylmethyl, heteroaryl,

R^2 and R^3 are hydrogen;

Ar is R^6 -substituted aryl;



R^6 is 1 to 5 substituents which can be the same or different and each is independently selected from the group consisting of halogen, $-CF_3$, $-OCF_3$, $-CN$, $-CHO$, $-SO_2R^5$, $-C(O)OR^8$, $-C(O)R^5$,



and

R^7 is two substituents which can be the same or different and independently selected from halogen, $-CN$ and $-CF_3$.

8. The compound of claim 7 wherein R^6 is one substituent.

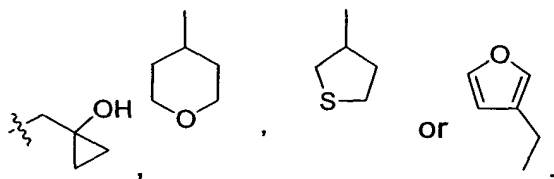
9. The compound of claim 8 wherein R^6 is at the meta position of Ar.

10. The compound of claim 9 wherein R^6 is $-CN$.

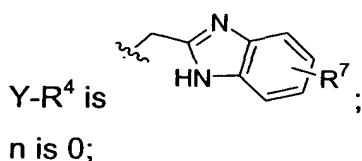
11. The compound of claim 9 wherein R^6 is $-C(=NH)NHAr$ or $-C(=NH)NH_2$.

12. The compound of claim 10 wherein R^7 is selected from the group consisting of Cl, F and $-CF_3$.

13. The compound of claim 1 wherein R^1 is hydrogen, methyl, ethyl, hydroxyethyl, cyclobutyl, cyclopentyl, cycloheptyl, $-propyl$, $-SO_2CH_3$, $-SO_2N(CH_3)_2$, $-COCH_3$, $-C(O)OC(CH_3)_3$, isopropyl, cyclopropylmethyl, heteroaryl,



14. The compound of claim 1 wherein X is $-CH_2-$;



r is 1;

Ar is R⁶-substituted aryl;

R¹ is alkyl or cyclopropylmethyl;

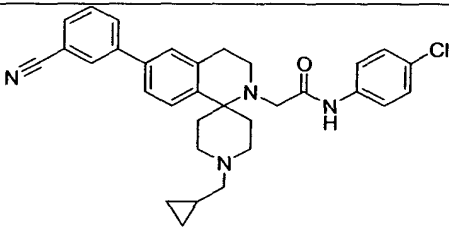
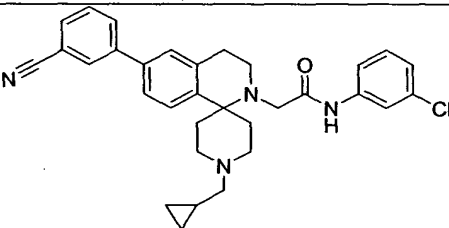
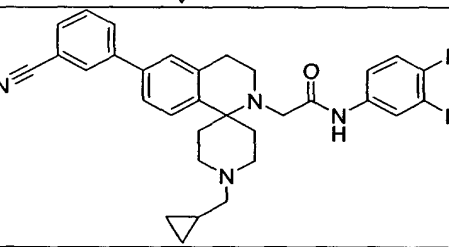
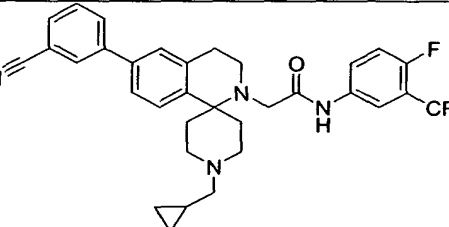
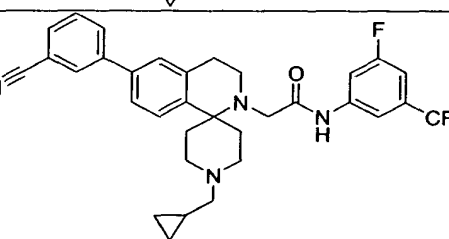
R⁶ is -CN and is substituted at the meta position of Ar.

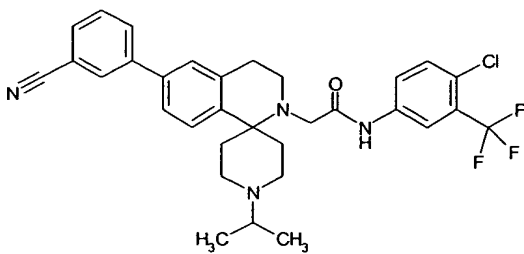
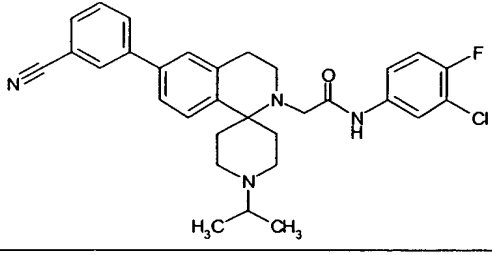
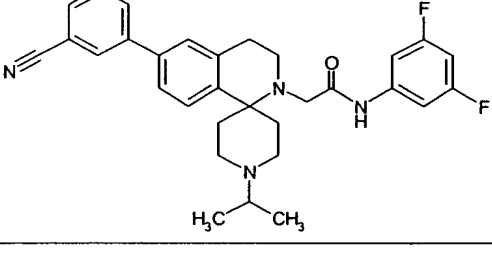
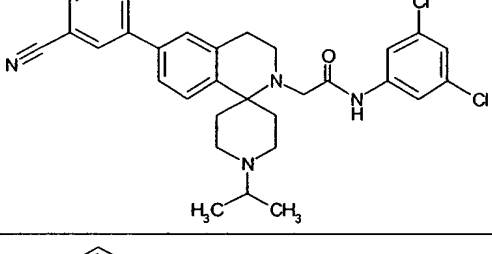
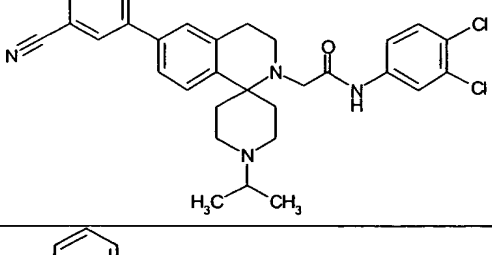
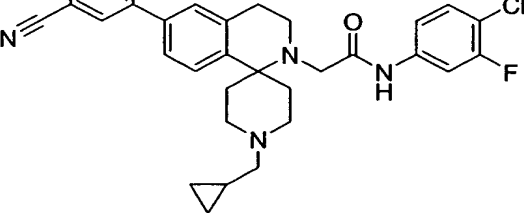
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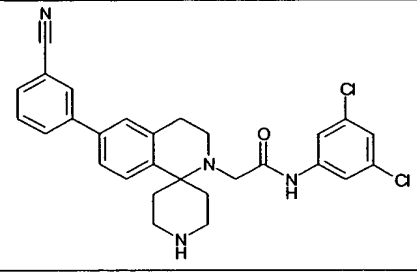
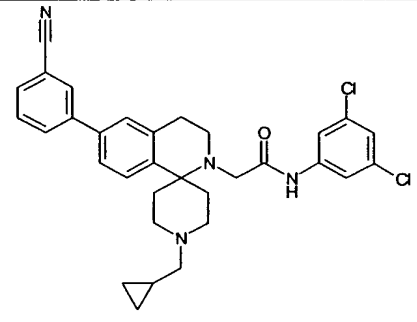
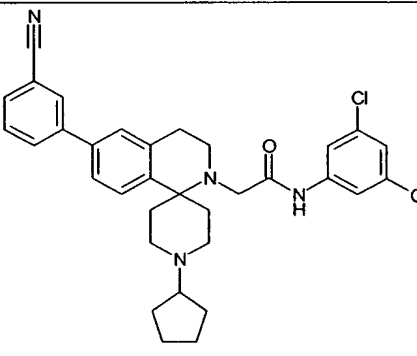
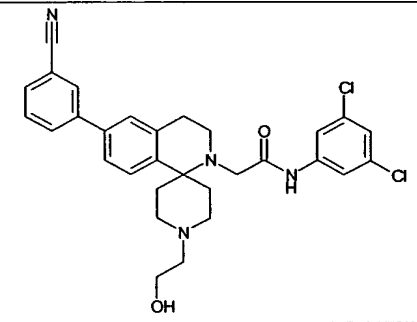
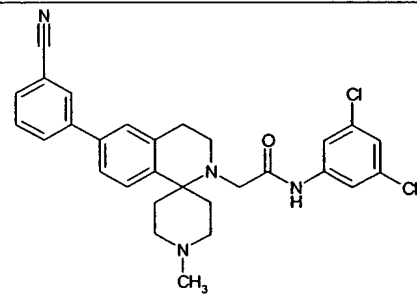
R⁷ is hydrogen or halogen.

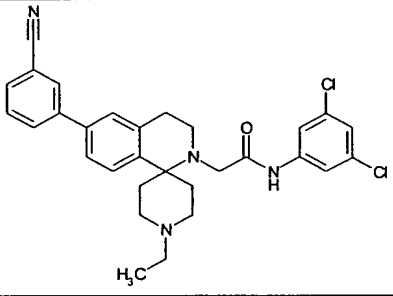
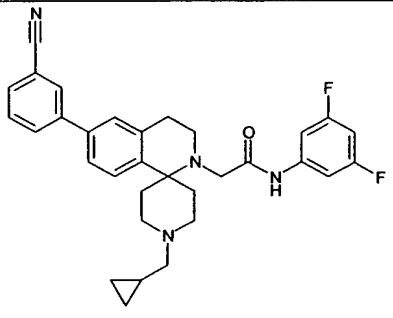
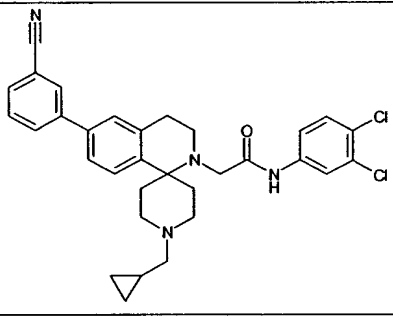
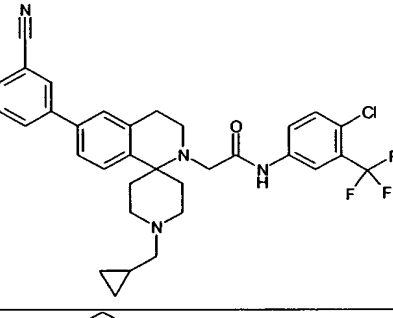
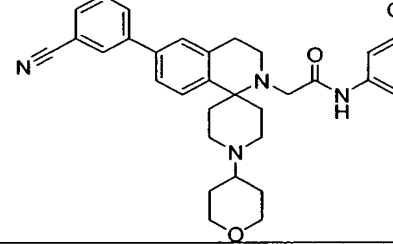
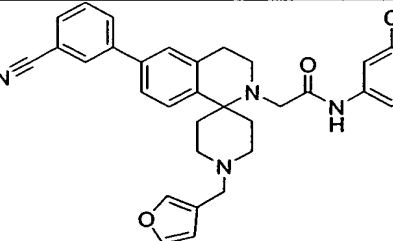
15. The compound of claim 14 wherein R⁷ is chloride or fluoride.

10 16. A compound selected from the group consisting of

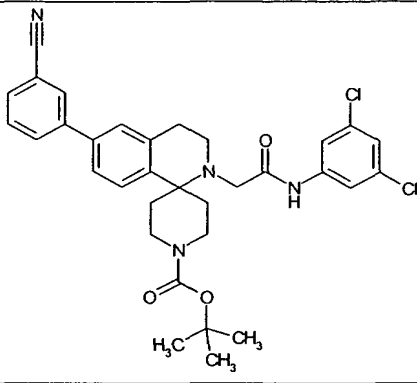
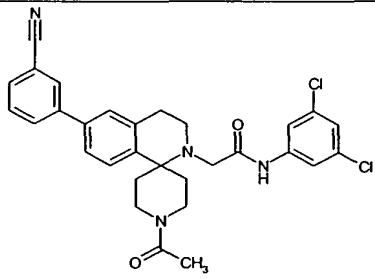
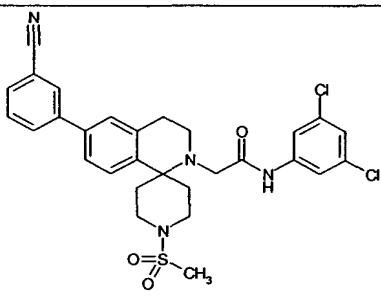
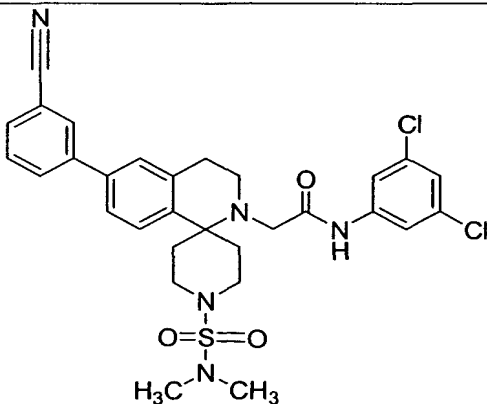
| | |
|----|---|
| 8b |  |
| 8c |  |
| 8d |  |
| 8e |  |
| 8f |  |

| | |
|----|--|
| 7d |  <chem>CC(C)N1CCN(C1C2=CC=C(C=C2C3=CC=CC=C3C#N)C(=O)NC4=CC=C(C(=C4)C(F)(F)F)Cl)C5</chem> |
| 7b |  <chem>CC(C)N1CCN(C1C2=CC=C(C=C2C3=CC=CC=C3C#N)C(=O)NC4=CC=C(C(=C4)Cl)F)C5</chem> |
| 7c |  <chem>CC(C)N1CCN(C1C2=CC=C(C=C2C3=CC=CC=C3C#N)C(=O)NC4=CC(=C(C(=C4)F)F)F)C5</chem> |
| 7a |  <chem>CC(C)N1CCN(C1C2=CC=C(C=C2C3=CC=CC=C3C#N)C(=O)NC4=CC(=C(C(=C4)Cl)Cl)F)C5</chem> |
| 7e |  <chem>CC(C)N1CCN(C1C2=CC=C(C=C2C3=CC=CC=C3C#N)C(=O)NC4=CC(=C(C(=C4)Cl)Cl)F)C5</chem> |
| 8a |  <chem>C1CCN(C1C2=CC=C(C=C2C3=CC=CC=C3C#N)C(=O)NC4=CC=C(C(=C4)C(F)F)Cl)CC5CC5</chem> |

| | |
|------------|---|
| 10c |  |
| 11c |  |
| 11d |  |
| 11e |  |
| 11f |  |

| | |
|------------|---|
| 11g |  |
| 8g |  |
| 8h |  |
| 8i |  |
| 11h |  |
| 11i |  |

| | |
|-----|--|
| 11b | <chem>N#Cc1ccc(cc1)C2=CC=CC3=C2N(CCN3C4CC4)CCN(CCN3C4CC4)CC(=O)Nc5cc(Cl)cc(Cl)c5</chem> |
| 11j | <chem>N#Cc1ccc(cc1)C2=CC=CC3=C2N(CCN3C4CCSC4)CCN(CCN3C4CCSC4)CC(=O)Nc5cc(Cl)cc(Cl)c5</chem> |
| 11a | <chem>N#Cc1ccc(cc1)C2=CC=CC3=C2N(CCN3C4CCCCCCC4)CCN(CCN3C4CCCCCCC4)CC(=O)Nc5cc(Cl)cc(Cl)c5</chem> |
| 12a | <chem>N#Cc1ccc(cc1)C2=CC=CC3=C2N(CCN3C4CC(C)CC4)CCN(CCN3C4CC(C)CC4)Cn5cnc6ccccc65</chem> |
| 12d | <chem>N#Cc1ccc(cc1)C2=CC=CC3=C2N(CCN3C4CCNCC4)CCN(CCN3C4CCNCC4)Cn5cnc6cc(Cl)c(Cl)cc65</chem> |
| 12e | <chem>N#Cc1ccc(cc1)C2=CC=CC3=C2N(CCN3C4CCNCC4)CCN(CCN3C4CCNCC4)Cn5cnc6cc(F)c(Cl)cc65</chem> |
| 12f | <chem>N#Cc1ccc(cc1)C2=CC=CC3=C2N(CCN3C4CCN(C4CC5CC5)CCN(CCN3C4CCNCC4)Cn5cnc6cc(Cl)c(Cl)cc65</chem> |

| | |
|---------|---|
| 30a |  |
| 30b |  |
| 30c |  |
| and 30d |  |

or a pharmaceutically acceptable salt or solvate.

17. A pharmaceutical composition comprising a therapeutically effective amount of
 5 at least one compound of claim 1 in combination with at least one pharmaceutically acceptable carrier.

18. A method of treating a metabolic disorder, an eating disorder or diabetes comprising administering a therapeutically effective amount of at least one compound of claim 1 to a patient in need of such treatment.

19. A method of treating an eating disorder comprising administering to a patient in need of such treatment a therapeutically effective amount of at least one compound of claim 1, or a pharmaceutically acceptable salt or solvate of said compound.

20. A pharmaceutical composition comprising a therapeutically effective amount of at least one compound of claim 16 in combination with at least one pharmaceutically acceptable carrier.

21. A method of treating a metabolic disorder, an eating disorder or diabetes comprising administering a therapeutically effective amount of at least one compound of claim 16 to a patient in need of such treatment.

22. A method of treating an eating disorder comprising administering to a patient in need of such treatment a therapeutically effective amount of at least one compound of claim 16, or a pharmaceutically acceptable salt or solvate of said compound.

23. The method of claim 18 wherein said eating disorder is hyperphagia.

24. The method of claim 18 wherein said metabolic disorder is obesity.

25. A method of treating a disorder associated with obesity comprising administering to a patient in need of such treatment a therapeutically effective amount of at least one compound of claim 1, or a pharmaceutically acceptable salt or solvate of said compound.

26. The method of claim 25 wherein said disorder associated with obesity is at least one of type II diabetes, insulin resistance, hyperlipidemia or hypertension.

27. A pharmaceutical composition which comprises a therapeutically effective amount of:

a first compound, said first compound being a compound of claim 1, or a pharmaceutically acceptable salt or solvate of said compound;

a second compound, said second compound being an antiobesity and/or anorectic agent selected from the group consisting of a β_3 agonist, a thryomimetic agent, an anorectic agent and NPY antagonist; and
a pharmaceutically acceptable carrier.

5

28. A method of treating an eating disorder which comprises administering to a patient in need of such treatment

an amount of a first compound, said first compound being a compound of claim 1, or a pharmaceutically acceptable salt or solvate of said compound;

10 and

a second compound, said second compound being an antiobesity and/or anorectic agent selected from the group consisting of a β_3 agonist, a thryomimetic agent, an anorectic agent and an NPY antagonist;

15 wherein the amounts of the first and second compounds result in a therapeutic effect.

29. A pharmaceutical composition which comprises a therapeutically effective amount of:

20 a first compound, said first compound being a compound of claim 1, or a pharmaceutically acceptable salt or solvate of said compound;

a second compound, said second compound selected from the group consisting of an aldose reductase inhibitor, a glycogen phosphorylase inhibitor, a sorbitol dehydrogenase inhibitor, a protein tyrosine phosphatase 1B inhibitor, a dipeptidyl protease inhibitor, insulin, an insulin mimetic, metformin, acarbose, troglitazone, rosiglitazone, pioglitazone, GW-1929, a sulfonylurea, glipazide, glyburide, and chlorpropamide; and

25

a pharmaceutically acceptable carrier.

30. A process for making a pharmaceutical composition comprising combining at least one compound of claim 17, and at least one pharmaceutically acceptable carrier.

30